

LanConn-100 User Guide

User's Manual

First Edition

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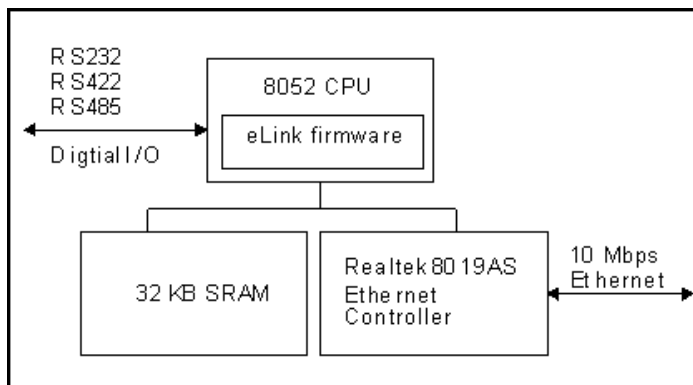
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1. Description

LanConn-100 is a full duplex serial port to Ethernet converter. Through LanConn-100, your system can easily communicate with the LAN, WAN or Internet via the RS232/RS422/RS485 port. When sending data to the network, LanConn-100 automatically adds the necessary TCP/IP stack. When receiving data from the network, LanConn-100 automatically removes the TCP/IP stack. LanConn-100 also provides a device interface with seven digital I/O ports, making it a powerful and cost effective solution to many applications such as industrial automation and remote (Internet enabled) device control.

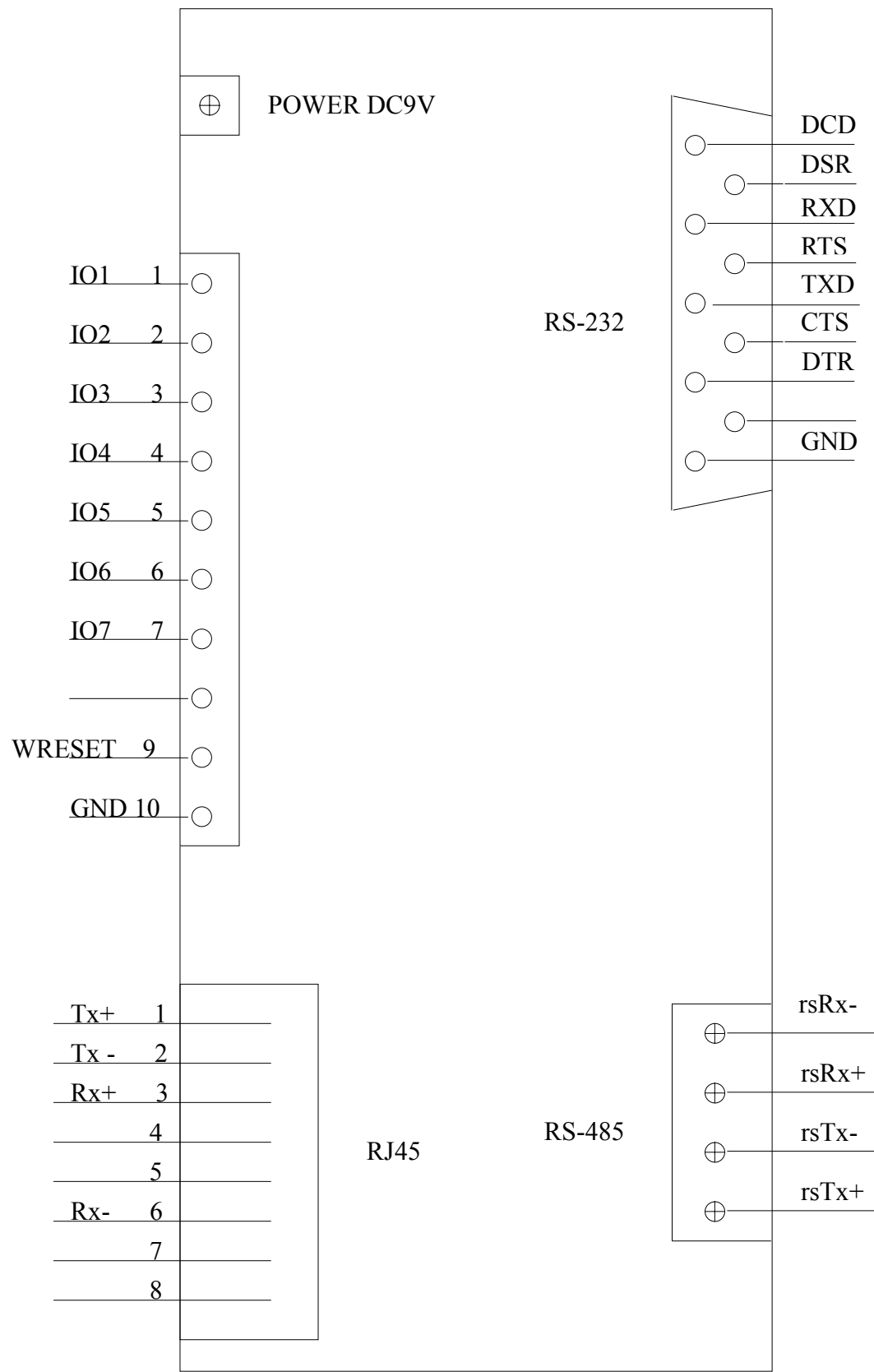
2. System Structure



3. Specifications

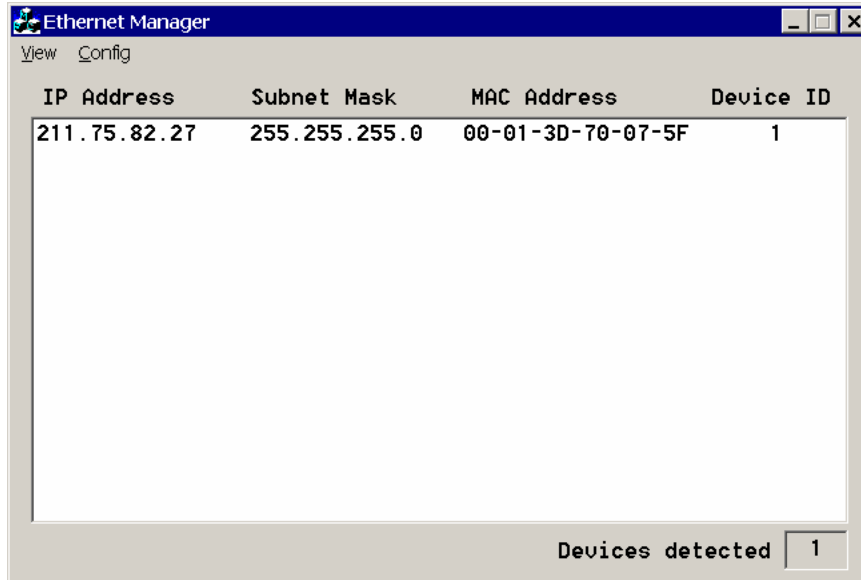
Hardware	Winbond 78E58 CPU, 36.864 MHz
	32KB SRAM
	Realtek 8019AS Ethernet controller
Protocol	ARP, IP, UDP, TCP, ICMP, HTTP, DHCP
Interface	10 Mbps Ethernet interface
	300-115200 bps asynchronous stream
	(RS232/RS422/RS485)
Throughput	9 KB/s half-duplex,
	6 KB/s full-duplex

4. Hardware Connection Diagram



5. Etm Manager Program

Etm.exe is a device manager program which runs under the Windows 32 bit environment. Using UDP broadcast packets, Etm.exe allows you to inquire and modify LanConn-100's basic parameters. Upon executing Etm.exe, the following screen (example) will appear if a LANCON-100 is found.



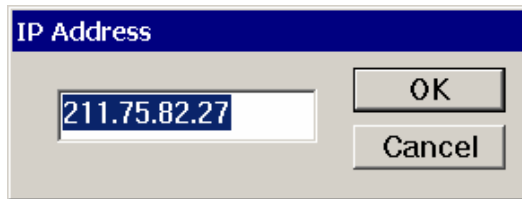
The screen shows number of devices detected, as well as their IP Address, Subnet Mask, MAC Address and Device ID. If you select the [View] / [Refresh] function (or press the F5 key), the system will re-detect the devices and update the screen accordingly. Because Etm.exe uses UDP Broadcast Packets, it has the following characteristics:

- It's not subject to the subnet restriction – the program is usable even if LanConn-100's IP and the PC's IP are not on the same subnet.
- Since broadcast packets cannot pass through the router, only the devices on the same network section can be detected.

Due to the fact that Etm.exe uses UDP broadcast, for security reasons the Configuration is available when only one LanConn-100 device is detected. In this case, the following parameters can be modified under the Configuration.

IP Address

Enter the new IP address and click [OK]. Or click [Cancel] to abort the operation

A dialog box titled "IP Address" with a blue header bar. It contains a text input field with the value "211.75.82.27" and two buttons, "OK" and "Cancel", positioned to the right of the input field.

IP Address

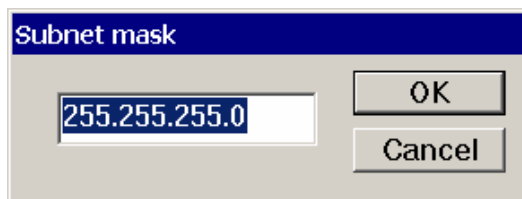
211.75.82.27

OK

Cancel

Subnet Mask

Enter the Subnet Mask value and click [OK]. Or click [Cancel] to abort the operation

A dialog box titled "Subnet mask" with a blue header bar. It contains a text input field with the value "255.255.255.0" and two buttons, "OK" and "Cancel", positioned to the right of the input field.

Subnet mask

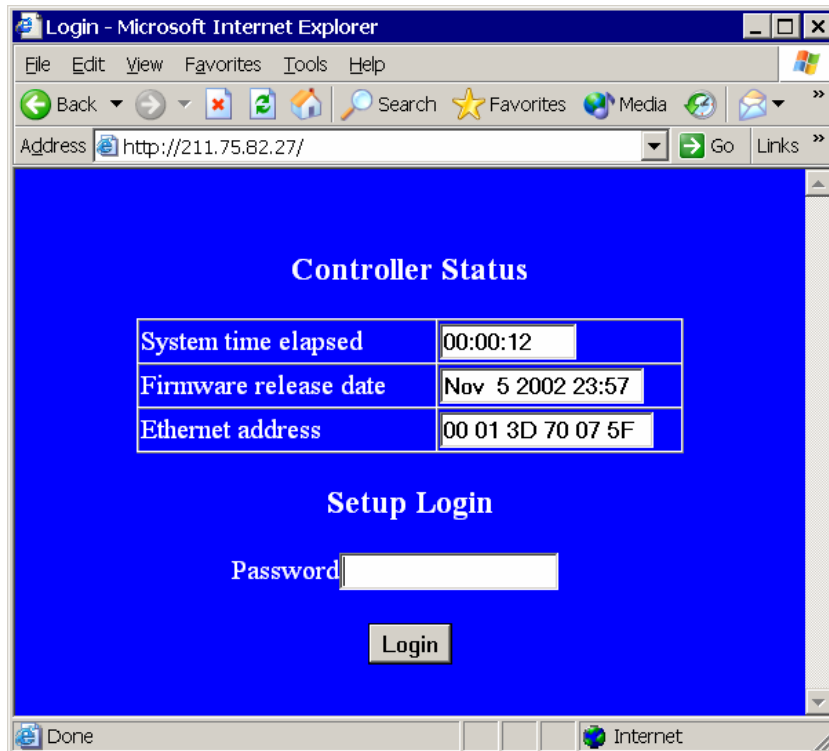
255.255.255.0

OK

Cancel

6. Browser Configuration

LanConn-100 supports the HTTP communication protocol. All device configurations can be easily set in the browser program. Just type in the LanConn-100's IP address, and the following screen will be displayed.



The following basic information is shown in the display.

- **System time elapsed:** The elapsed time since the system was turned on. In the screen shown above, the elapsed time is 0 hour 0 minute and 9 seconds. This information can be used to determine if the device has been operating normally without being reset.
- **Firmware release date:** This is used to identify the firmware version of the LanConn-100 device.
- **Ethernet address:** The Ethernet address has 6 hex-decimal bytes.

Now, type in the password and click the [Login] button to enter the configuration screen. Note that initially the password is not required, just click the [Login] button.

- If the correct password is not entered in three tries, you have to wait at least 20 minutes to try again.

The following is an example of the configuration screen.

Controller Setup	
IP address	211.75.82.27
Subnet mask	255.255.255.0
Gateway address	211.75.82.254
DHCP client	Disable
Socket port of HTTP setup	80
Socket port of serial I/O	100 TCP Server
Socket port of digital I/O	101 TCP Server
Client mode server IP address	0.0.0.0
Client mode server socket port	0
Serial I/O settings (baud rate, parity, data bits, stop bits)	57600 N 8 1
Interface of serial I/O	RS 232
Packet mode of serial input	Disable
Packet mode inter-packet timeout	10 ms
Device ID	1
Report device ID when connected	Disable
Setup password	
Access password	

Update

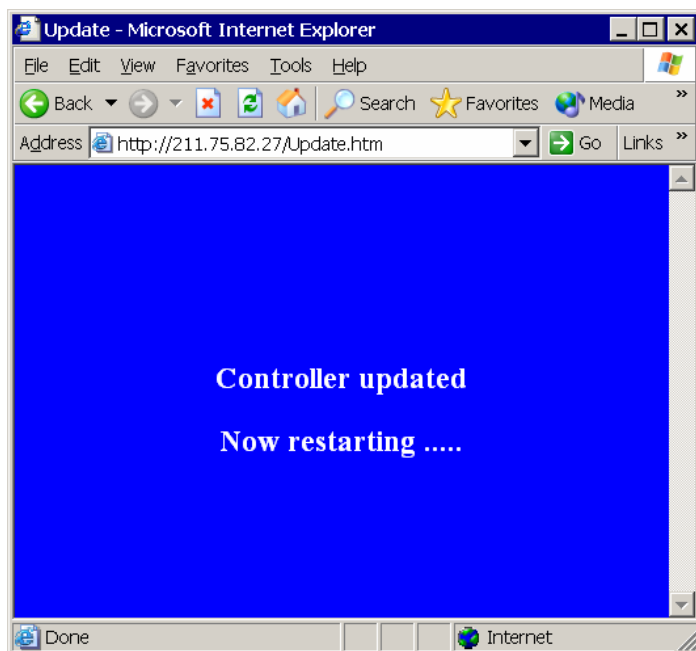
Click the [Update] button to update the parameters.

IP Address	4 numbers separated by dots, assigned by the server under DHCP mode.
Subnet mask	4 numbers separated by dots, assigned by the server under DHCP mode.
Gateway address	4 numbers separated by dots, assigned by the server under DHCP mode.
DHCP client	If disabled, then IP address, Subnet masks and Gateway address must be assigned manually.
Socket port of HTTP setup	If disabled, then IP address, Subnet masks and Gateway address must be assigned manually.
Socket port of	• Port Number: any number between 1 and 65536, can be assigned to port

serial I/O	80 and 81. this function allows users build their own Web pages. • Socket Type ■ TCP Server, uses TCP protocol, passively waits for Client. ■ TCP Client, uses TCP protocol, actively connects to Server. ■ UDP Client, uses UDP protocol, exchanges packets with Server without connection.
Socket port of digital I/O	This is an extra I/O socket with similar configuration as the socket port of serial I/O, but the Port Number must be different. • Port Number: any number between 1 and 65536, except 80 and 81 (which have been designated as the web pages.) • Socket Type: ■ TCP Server, uses TCP protocol, passively waits for Client. ■ TCP Client, uses TCP protocol, actively connects to Server. ■ UDP Client, uses UDP protocol, exchanges packets with Server without connection.
Client mode server IP address	The server IP address under TCP Client or UDP Client mode.
Client mode server socket port	Any Valid port can be assigned (1-65535),
Serial I/O settings (baud rate, parity, data bits, stop bits)	• Baud Rate: 300 - 115200 bps • ■ N,8,1 (10 bits) ■ N,8,2 (11 bits) ■ E,7,1 (10 bits) ■ E,7,2 (11 bits) ■ O,7,1 (10 bits) ■ O,7,2 (11 bits) ■ E,8,1 (11 bits) ■ O,8,1 (11 bits)
Interface of serial I/O	• RS232: use only TxD and RxD to transfer and receive data. • RS232 (RTS/CTS): ■ TxD, RxD – transfer and receive data. ■ RTS/CTS – flow control. • RS232 (RTS/CTS, DTR/DSR): ■ TxD, RxD – transfer and receive data. ■ RTS/CTS – flow control. ■ DTR – socket connection status, DSR – socket connection control.

	• RS485 (Half duplex): half duplex. • RS422 (Full duplex): full duplex.				
Packet mode of serial input	If packet mode is disabled, the data received from the serial port will be transmitted immediately with minimal delay. If packet mode is enabled, the data will be saved in the buffer memory first, and transmitted when the entire packet is received or when the buffer memory is full.				
Packet mode inter-packet timeout	In packet mode, the time constant used to determine if the packet is finished. Acceptable range is 10 to 1000 ms.				
Device ID	User assigned device ID number. Acceptable range is 0 to 65535.				
Report device ID when connected	If this function is enabled, the device will report the device ID after the socket is connected. The format is: <table border="1"> <tr> <td>Serial I/O socket</td><td>nnnnnA[LF][CR]</td></tr> <tr> <td>Digital I/O socket</td><td>nnnnnB[LF][CR]</td></tr> </table> There are eight bytes: "nnnnn" is the 5-digit device ID, [LF] is decimal 10, and [CR] is decimal 13.	Serial I/O socket	nnnnnA[LF][CR]	Digital I/O socket	nnnnnB[LF][CR]
Serial I/O socket	nnnnnA[LF][CR]				
Digital I/O socket	nnnnnB[LF][CR]				
Setup password	The login password can be empty of 1 to 15 characters long. If the password is empty then no password is required for login.				
Access password	This is the password for socket connection. It can be empty or 1 to 15 characters long. If the password is empty, then no password is required for socket connection. If the password is not empty, then it must be entered immediately after socket connection is made. If the password is not entered within 10 seconds or a wrong password is entered, then LanConn-100 will automatically disconnect. If a wrong password is entered for three times in a row, no connection is allowed within 20 minutes.				

After clicking on the [Update] button, the following screen will appear:

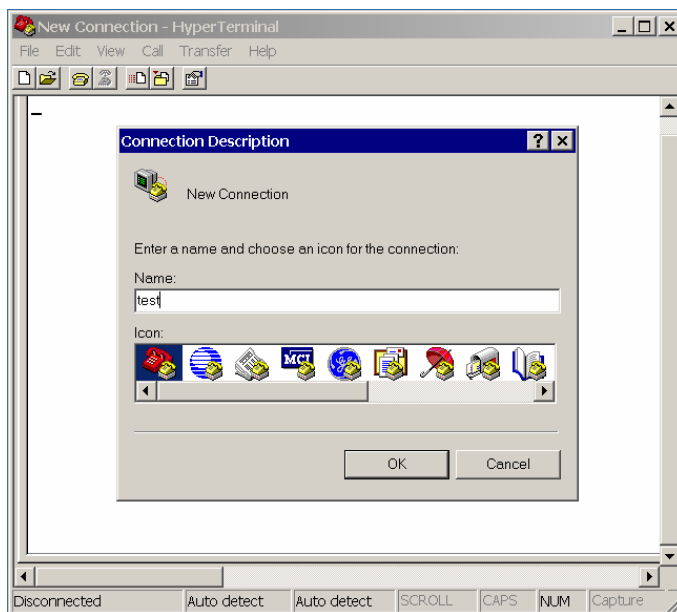


At this point LanConn-100 is restarting with the new parameters. In about 5 seconds the system will return to the Login screen.

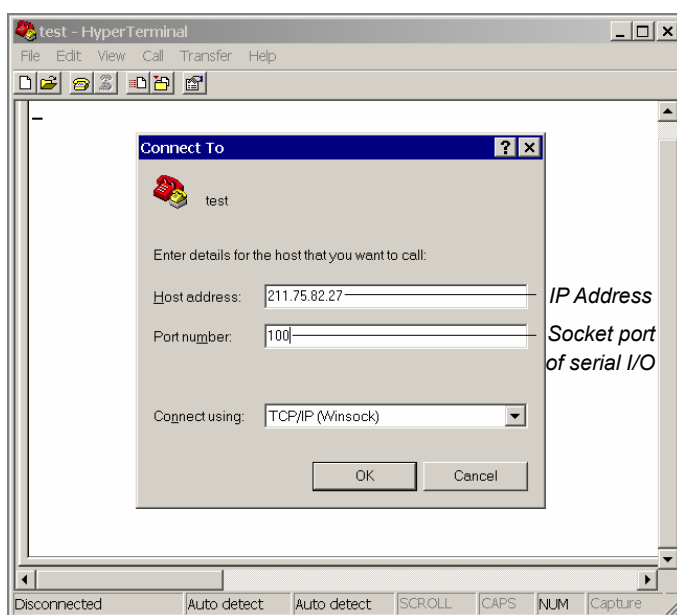
7. Testing

A. Null Modem

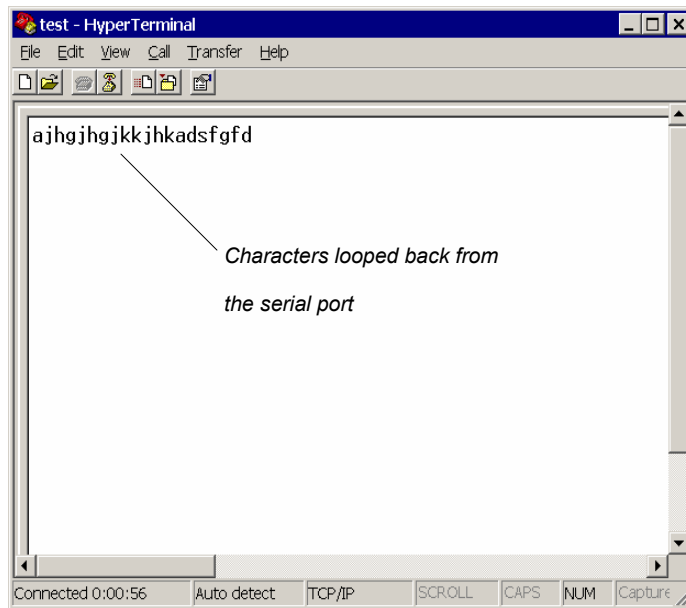
- (1) Make a null modem by connecting pin 2 and 3 together on a 9-pin male RS-232 connector. Plug the null modem on LanConn-100's RS-232 connector.
- (2) Connect LanConn-100 onto the LAN, into the same subnet as the testing PC.
- (3) Execute Hyperterm.exe. The following screen will appear.



- (4) Key in your favorite name and click the [OK] button. The following screen will appear.



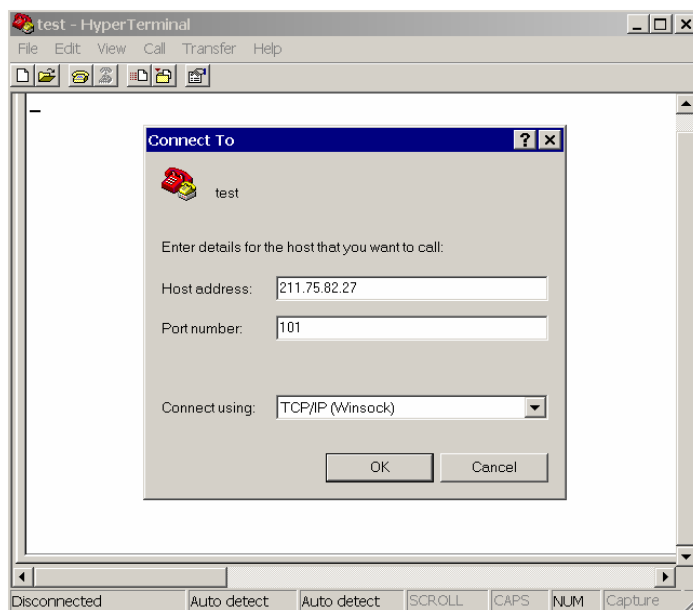
- (5) Enter IP address and socket port of serial I/O. Make sure TCP/IP (Winsock) is selected and click the [OK] button. The following screen will appear.



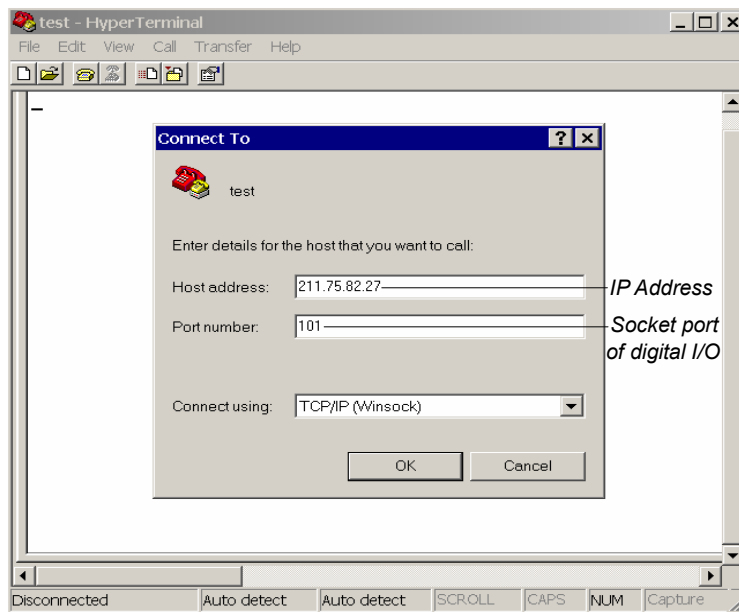
- (6) At this point you may type in a few test characters. These characters will be looped back through the null modem, and displayed on the screen. Note that "Rx" will flash once whenever you type in a character, to indicate the receiving of that character. You may also send a text file and it will be displayed on the screen. However, you should not use the "Send File" function because the transmission protocols such as Zmodem will cause Hyperterminal to reset LanConn-100.

B. Digital I/O

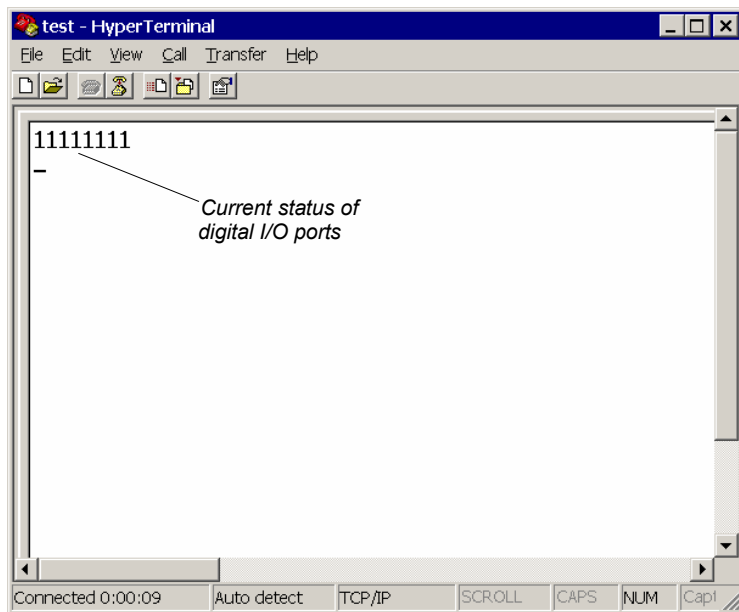
- (1) Connect LanConn-100 onto the LAN, into the same subnet as the testing PC.
- (2) Execute Hypertm.exe. The following screen will appear.



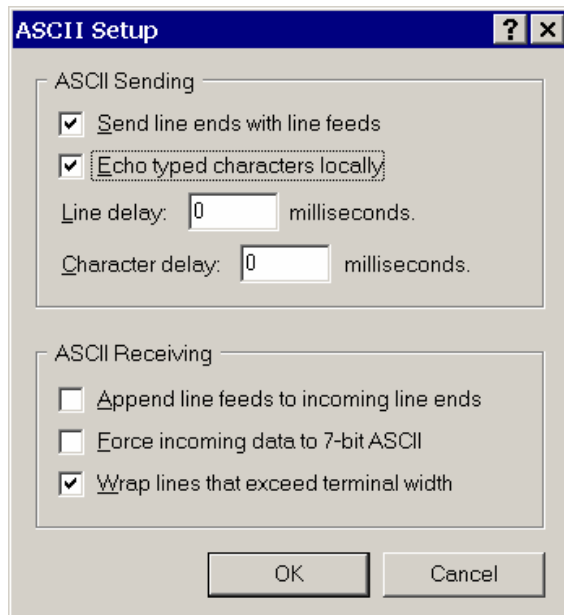
(3) Key in your favorite name and click the [OK] button. The following screen will appear.



(4) Enter IP address and socket port of digital I/O. Make sure "TCP/IP (Winsock)" is selected and click the [OK] button. The following screen will appear.



(5) Select [File][Property][Configure][ASCII] and make the following settings.



(6) At this point you may key in command strings to change the digital I/O port status. For example,

- 020 == change output #2 to low
- 021 == change output #2 to high
- 070 == change output #7 to low
- 071 == change output #7 to high

